

We Claim:

1. A blood processing system comprising
a source of blood cells,
a blood cell storage container,
a source of an additive solution for blood cells,
5 a blood component collection flow channel
communicating with the blood cell storage container and
including an in-line filter to remove leukocytes from
blood cells before entering the blood cell storage
container,

10 a pumping mechanism communicating with the blood
component collection flow channel, and

a controller to operate the pumping mechanism in
different modes, including a first mode to convey blood
cells from the blood cell source into the blood component
15 collection flow channel and a second mode for conveying
additive solution from the additive solution source into the
blood component collection flow channel, the controller
including a function to alternate the first and second
modes.

2. A system according to claim 1
wherein the function alternates the first and
second modes to achieve a desired ratio between blood cell
volume and additive solution volume in the blood cell
5 storage container.

3. A system according to claim 1
wherein the function terminates the first mode
when a desired volume of blood cells has been conveyed from
the blood cell source and operates the pumping mechanism in
5 the second mode to flush residual blood cells from the
filter into the red blood cell storage container.

4. A system according to claim 1
wherein the pumping mechanism includes a fluid
pressure actuated pump and an actuator to apply fluid
pressure to the pump.

5. A system according to claim 1

wherein the pumping mechanism includes a fluid pressure actuated pump housed within a cassette and an external actuator to receive the cassette and operate the fluid pressure actuated pump, and

wherein the controller is coupled to the external actuator.

6. A system according to claim 1

wherein the filter includes a fibrous filter medium.

7. A system according to claim 1

wherein the filter includes a filter medium and a housing enclosing the filter medium.

8. A system according to claim 7

wherein the housing comprises a flexible material.

9. A system according to claim 8

further including a fixture to restrain expansion of the housing during operation of the pumping mechanism.

10. A system according to claim 1

wherein the controller includes a function to derive a value reflecting volume of blood cells present in the blood cell collection container after passage through the filter as a percentage of volume of blood cells conveyed from the red blood cell source to the filter.

11. A system according to claim 1

wherein the blood cells comprise red blood cells.

12. A blood processing method comprising the steps of

(a) conveying blood cells from a blood cell source into a blood component collection flow channel that includes a blood cell storage container and an in-line filter to remove leukocytes from blood cells before entering the blood cell storage container,

(b) conveying additive solution from an additive

solution source into the blood component collection flow channel, and

(c) alternating steps (a) and (b).

13. A method according to claim 12

wherein step (c) alternates steps (a) and (b) to achieve a desired ratio between blood cell volume and additive solution volume in the blood cell storage container.

14. A method according to claim 12

further including a step (d) comprising terminating step (a) when a desired volume of blood cells has been conveyed from the blood cell source and performing step (b) to flush residual blood cells from the filter into the blood cell storage container.

15. A method according to claim 12

further including a step of holding the filter in a restraining fixture during steps (a) and (b).

16. A method according to claim 12

further including a step of deriving a value reflecting volume of blood cells present in the blood cell collection container after passage through the filter as a percentage of volume of blood cells conveyed from the blood cell source to the filter.

17. A method according to claim 12

wherein the blood cells comprise red blood cells.